SECTION C - ARS INDUSTRIAL HYGIENE FUNCTION

CHAPTER VI - ARS HEARING CONSERVATION PROGRAM

CHAPTER VI

ARS HEARING CONSERVATION PROGRAM

CONTENTS STARTING PAGE

CHAPTER VI - SECTION C

ARS HEARING CONSERVATION PROGRAM

A PURPOSE OF THE CHAPTER

The purpose of this chapter is to establish the ARS Hearing Conservation Program in order to comply with the requirements of 29 CFR 1910.95c, which requires a Hearing Conservation Program be administered by ARS when Time Weighted Average (TWA) noise exposures equal or exceed 85 dba for an 8 hour period, as measured on the slow response scale of a sound measuring device.

B APPLICABILITY

The contents of this chapter are applicable to all temporary, part time and full time ARS employees at all ARS owned, and non-ARS owned facilities. Contractor employees working at ARS facilities must comply with Department of Labor, Occupational Safety and Health Administration (OSHA) standards and the contractor's safety and health requirements. Visitors to ARS facilities may be required to utilize provided hearing protective equipment in order to reduce, or limit exposure to occupational noise encountered during their visit.

C AUTHORITIES

1 29 Code of Federal Register, Part 1910.95c, Occupational Noise Exposure

2 ANSI 224.22, Minimum Standards for Hearing Protection Devises

D POLICY

Protection against the effects of noise exposure shall be provided when the sound levels exceed those shown below when measured on the A-scale of a standard sound level meter at slow response.

PERMISSIBLE NOISE EXPOSURES

Duration per day, hours:

8 90

6 92

4 95

3 97

2 100

1-1/2.....102

1 105

D POLICY (Continued)

1/2.....110

1/4.....115

When employees are subjected to sound levels exceeding those listed above, feasible administrative or engineering controls shall be utilized. If such controls fail to reduce sound levels within the levels of the table, personal protective equipment shall be provided and used to reduce sound levels within the levels of the table. Such protective devices shall provide sufficient attenuation to control exposure to the hazard. Only those ear protectors which have been tested in accordance with ANSI 224.22 shall be acceptable. Ear insert devices shall be fitted or determined individually by a competent person. Plain cotton is not an acceptable protective device.

If the variations in noise level involves maxima at intervals of 1 second or less, it is to be considered continuous.

In all cases where the sound levels exceed the values shown in the table, a continuing effective hearing conservation program shall be administered.

When the daily noise exposure is composed of two or more periods of noise exposure of different levels, their combined effect should be considered rather than the individual effect of each. Exposure to different levels for various periods of time shall be computed according to the formula set forth below:

Where:

$$Fe = \frac{T1}{L1} + \frac{T2}{L2} + .. + \frac{TN}{LN}$$

Fe = The equivalent noise exposure factor

T = The period of noise exposure at any essentially constant level

L = The duration of the permissible noise exposure at the constant level (from the table)

If the volume of Fe exceeds unity (1) the exposure exceeds permissible levels.

Exposure to implusive or impact noise should not exceed

140 dB peak sound pressure levels.

D POLICY (Continued)

When the sound pressure level in a working area exceeds

115 dBt, steady state, personal ear protection equivalent to the combination of ear plugs and ear muffs shall be required.

Sound pressure level measurements shall be made by qualified personnel using properly calibrated instruments.

E DEFINITIONS

1 Hear Conservation - Preventing or minimizing noise-induced deafness through the use of hearing protection devices (i.e. plugs, muffs, etc.) and the control of noise through administrative and

engineering controls.

2 Noise - Unwanted sound.

3 Sound - Sound is descriptive of useful communication or pleasant sounds (e.g. music). Sound is an oscillation in pressure, stress, particle displacement, particle velocity, etc., which is propagated in an elastic material, in a medium with internal forces (e.g. elastic, viscous), or the super-position of such propagated oscillations.

F DUTIES AND RESPONSIBILITIES

1 The Center Director/Location Coordinator, will:

a Insure that noise level measurements are taken in any work area that is suspected by either the employees or supervisory personnel to be a noise hazard area.

b Establish a Hearing Conservation Program that complies with the provisions of 29 CFR 1910.95c if sound level measurements reveal that an area of exposure to hazardous noise exists (85 dba TWA for 8 hours).

c Insure that all personnel working in an area determined to be a hazardous noise area receive audiometric testing as required by 29 CFR 1910.95g and h, and training as required by 29 CFR 1910.95k.

d Provide hearing protection equipment (ear defenders, ear plugs, etc.) for those employees working in an area determined to be a hazardous

noise area, and enforce its use. Consideration

will be given to reducing the exposure to

F DUTIES AND RESPONSIBILITIES (Continued)

hazardous noise through engineering controls or other means.

e Provide hearing protection equipment to those employees who desire it and work in areas where noise, although below the prescribed hazard level, may be considered a nuisance or distraction.

2 The Area Safety and Health Manager/Cluster Environmental Protection Specialist, will:

a Assist location management and supervisory personnel by providing guidance and taking sound level measurements when the proper equipment is available.

b Monitor the location hearing conservation program during the Annual Safety, Health and Environmental Program Management Evaluation and Inspection to insure it meets the minimum requirements of 29 CFR 1910.95.

G PROGRAM ELEMENTS

1 Noise Level Measurements - Accurate noise level measurements are a key element in an effective Hearing Conservation Program. The noise level measurements are the determining factor as to whether a work area will be considered a noise hazard area.

2 Audiometric Testing - Audiometric testing is extremely important since a comparison between the first, or baseline test and follow-on tests can determine if a hearing loss is occurring, so that steps can be taken to reduce/treat the loss.

3 Hearing Protection Equipment - Hearing protection equipment should be selected on the basis of protection provided, suitability, and employee comfort. Ear plugs, other than the disposable type should be fitted by a qualified person to insure maximum attenuation of noise. In addition, if not kept clean, ear plugs can also carry dirt and disease bearing materials into the ears. Ear defenders or muffs may provide sufficient protection with fewer problems.

G PROGRAM ELEMENTS (Continued)

4 Training and Publicity - Personnel required to use hearing protection must be trained in the proper use and care of the protective equipment issued for the work area. Frequent refresher training should be given. Areas of hazardous noise requiring the use of hearing protection should be well marked with signs. Signs are available from most major manufacturers of safety signs.

H JOB SITUATIONS WITH NOISE HAZARDS

Listed below are job situations and equipment which are noise hazards. This list is not all-inclusive; there are other jobs and equipment which exceed tolerable noise limits.

o Grinding (bench or hand)

o Arc welding

o General machining

o Abrasive cutoff saw

o Pneumatic tools

o Metal hammering

o General woodwork and carpentry

o Sign routing

o Nail guns

o Light aircraft

o Helicopters

o Generators

o Pumpers (fire fighting)

o Air compressors

o Tractors

o Chain Saws

o Snowmobiles

o Trail bikes

o Pile drives

I HEARING PROTECTORS - A DISCUSSION

Combinations of muffs and plugs are slightly less effective than special flight helmets, followed by the best of the muff protectors and the custom-molded plugs. Next are the standard reuseable plugs, and finally, least effective from an overall point of view, are the disposable plugs. There certainly is a place for all these protectors in the total ARS Hearing Conservation Program. If the protection needed is slight, or if protectors are only occasionally needed, then even the cheaper disposable plugs can be appropriate. In some situations, dust and dirt make disposable plugs or muff protectors more practical than reuseable plugs, which tend to become very dirty. Custom-molded plugs are less likely to be allowed to become dangerously filthy, but

I HEARING PROTECTORS - A DISCUSSION (Continued)

all hearing protectors require some periodic cleaning attention.

Some workers will resist the use of any hearing protector. The argument most often heard is that they cannot hear their machinery; warning signals, such as a siren; or the conversation of their fellow workers or supervisor, if hearing protection is worn. This argument is invalid.

One's ability to hear a wanted sound in a background of noise is related to the ratio of the loudness of the noise to the loudness of the wanted signal (signal-to-noise ratio). The hearing protector will cut down the volume of the background noise as much as it will cut down the volume of the sound that you want to hear. Thus, there is no practical difference in signal detection in noise whether or not you are wearing protection. In fact, in certain situations, because of the nature of the hearing protection device, signal detection is actually improved by the protection device.

The best protection is provided by the hearing protection which the employee will wear. A great deal more than the attenuation effectiveness must be considered when selecting a hearing protector. Comfort is particularly important, and if an employee reports that one type of protector is uncomfortable and another is quite acceptable, the comfortable protector that will be worn is the obvious choice--even though it might have a somewhat lower effectiveness score than an alternate choice.

J SPECIFIC TYPES OF PERSONAL PROTECTION EQUIPMENT

Prior to purchasing and using personal protective equipment, the purchaser, supervisor, and individual wearing the equipment should review Title 29 Code of Federal Regulations, Part 1910, Subpart I, and/or Part 1926, Subpart E.

There are many types, styles, and brands of hearing protection available. Each has its advantages and disadvantages, and no one type is suitable for all employees or all job situations.

Some available hearing protectors include:

o Disposable plugs

o Reusueable plugs

o Bonded semi-inserts

o Amplitude-sensitive plugs

J SPECIFIC TYPES OF PERSONAL PROTECTION EQUIPMENT (Continued)

o Muffs

o Combination muffs and plugs